DEVELOPER-INSTALLED WATER MAINS

INFORMATION SHEETS FOR ENGINEER

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SEATTLE PUBLIC UTILITIES

ENGINEER'S CHECKLIST

Prior to acceptance of any plans for Departmental review**,** we require both:

1. Property Owner Contract to be signed and all fees and deposits paid, and
2. Estimated start date of the project.

Prior to scheduling the preconstruction meeting for the project, we require no less than two weeks between plan approval and the preconstruction meeting.

Property Owner Contract Drawings Must Adhere To The Following Requirements:

General:

1. SPU will provides Engineer/Consultant with Resources CD and Digital Data Submission Standards for use to creating digital design plan. This CD contains documents, proprietary format files and support software comprising reference data from the City of Seattle GIS for a specific geographic area, extracted on the disk noted on the disk. These GIS data sets have been provided as reference material for the specified use described use in a License Agreement. **The data sets may be used to depict approximate locations of surface features and underground facilities, but are not intended for use as the basic for detailed construction design documents**. To establish the physical location and actual nature of any underground pipe, utility, facilities or equipment, map users must call the **One Call Utilities Location Call Center at 1-800-424-5555.** For City of Seattle facilities as-built, Designer Engineer need to go to the Vault (Municipal Building 8th Fl) 600 4th Ave, Seattle WA 98104. **http://www.ci.seattle.wa.us/util/planning/engineering/vault.htm**

2. Auto CAD Rel. 14/2000 drawing specifications can be found at: http://www.ci.seattle.wa.us/util/planning/engineering/CADResources.htm

3. City of Seattle Standard Specifications and Standard Plan can be found at http://www2.cityofseattle.net/util/engineering/

Manual drafting guideline please see below:

A. Standard Mylar sheets, as provided by SPU, shall be used. These drawing sheets are 22" by 36" with a thickness of 3 mil. Sheets are available in either full blank or half-blank and half profile grid formats.

B. Ink shall be used for original drawings which are submitted as final drawings. Pencil and composite drawings may be used if later copied reprographically onto a final photo Mylar drawing 3 mil in thickness. Pressure sensitive tapes and sheet materials are encouraged (and required per the standards in many cases) to aid in plan clarity. Drawings, which contain these pressure sensitive tapes and materials, must be copied reprographically onto a final photo Mylar drawing 3 mil. in thickness.

C. Drawing quality, neatness, and adherence to City standards is required. Drawings shall be suitable for diazo, reprographics including one half-size reductions, and microfilming.

D. Each drawing sheet shall include the project title as assigned by a completed signature block, a north arrow, the drawing scale, the engineer's seal and signature, and the SPU job number.

E. Whenever there is a joint project between the property owner and SPU, the plans shall clearly identify which entity shall provide specific materials, which entity shall perform specific tasks, and the sequencing of the specific work tasks.

F. Final drawings shall become the property of SPU upon approval.

G. Copies of the City of Seattle Standard Plans and Standard Specifications may be obtained at the 8th floor information counter in the Seattle Municipal Building.

Design Standard for both Auto CAD and Manual Drafting.

First Sheet:

1. A cover sheet or first sheet shall include a vicinity map, a drawing legend, and general notes.

2. The vicinity map shall be created from a 1" = 400' map (supplied by SPU) which shows existing water mains, hydrants and pressure zones. Proposed water mains, hydrants, and pressure zones shall be shown such that they are clearly differentiated from existing features.

3. General notes shall include those supplied by SPU.

Plan Drawings:

4. Plan drawings shall include both a plan view and a profile view. Drawing scale shall be 1" = 20' for the plan view, and 1" = 20' horizontal with 1" = 10' vertical for the profile view.

5. Plan views shall include all existing and proposed rights-of-way, utilities, and improvements within the street area, which may impact the water system improvements. Features shall be shown in accordance with the City's standard symbols and abbreviations in the current edition of the City of Seattle Standard Plans and Specifications.

6. Plan views shall be oriented on the sheet such that north is either toward the left side, toward the top, or in between (within the upper left quadrant.)

7. Water mains shall be located in standard water main locations whenever possible.
    - 10' north or cast of the centerline of a street right-of-way.
    - 5' north or cast of a centerline of a 20' casement.
    - 5' to 10' minimum horizontal clearance from other utilities depending upon the depth of the other utilities.

8. Water mains, hydrants, meters, and service lines shall not be located within 5' of trees, utility poles, landscaping, fences, etc.

9. Plan views shall locate (by dimensions or stationing) proposed water system improvements from established street right-of-way or easement center lines with adequate detail to allow convenient layout in the field.

10. Plan views shall include existing and proposed pressure zone boundaries and pressure zone designations.

11. Special construction requirements shall be noted on the plan views (e.g., Class B bedding using type 6 or 7 sand shall be installed when polywrap is required).

12. Match lines shall be used whenever plans continue from sheet to sheet.

13. Profile views shall include all existing and proposed utilities that cross or may otherwise be encountered during construction.

14. City of Seattle datum shall be used for elevations.

15. Stationing shall be included in both the plan and profile views.

16. Profile views shall include grade break points, invert elevation, and location or stationing for proposed water mains.

17. All water meter services are tapped perpendicular to the main & do not go off at an angle.

18. Each meter has a separate tap on the main, for instance when 2 are on either side of common property line; they do not branch off one tap.

19. Easement lines of meters should be noted on plan.

20. Be clear which is done by SPU and which is done by Contractor.

Detail Drawings:

21. Detail drawings shall be prepared and included on detail drawing sheets as appropriate.

Construction Standards:

The 2000 City of Seattle Standard Specifications (SPU 2000) includes:

- Pipe and Fittings,
- Trench Excavation,
- Bedding,
- Pipe Installation,

- Valves,
- Hydrants,
- Service Connections,
- Irrigation System (Backflow Prevention),
- Water (for concrete, irrigation and hydrant use),
- Distribution Materials

These specifications include construction materials and methods of construction. Performance standards desired and expected are reflected in the construction standards. All public and private construction within the City of Seattle public right-of-way must comply with the Standard Specifications. The 2000 City of Seattle Standard Plans supplement the Standard Specifications.

Where applicable, specific standard references to professional and technical society standards (such as AWWA, APWA) have been incorporated. As standards are upgraded, there is a system in place to incorporate these updates and revisions. For the painting of interior of water tanks, coating are limited to those that have been certified to meet NSF standard 61.

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GENERAL NOTES ON PLANS FOR 4" THROUGH 2" WATER MAINS

1. All pipe, appurtenances and work shall conform to the City of Seattle Standard Plans and Specifications, latest edition, unless otherwise noted on the approved plans.

2. All materials for water distribution shall be new. *SPU will* provide any required hydrants.

3. Pipe *(W) 4"* and larger shall be *D. 1. P. CL. 52* conforming to *AWWA C-151* with cement mortar lining conforming to AWWA C-104. Unless otherwise noted, joints shall be mechanical or slip joint. Restrained joint pipe is required where terrain is greater than 15% slope, where the soil is subject to liquefaction, where the area is defined as sensitive, where space is confined (not enough room for mechanical joint or concrete block restraint) and where required by SPU.

4. Pipe *(W) 4"* and larger shall be subject to SPU taste testing procedures prior to installation.

5. All fittings shall be ductile Iron conforming to AWWA C-110 and C-111, or *AWWA* C-153, and shall be cement mortar lined conforming to *AWWA C-104*.

6. SPU Standard Plan #300 shall make all connections to existing water mains.

7. Prior to laying pipe the contractor shall:

A. In the presence of the Resident Engineer, expose the existing water main to determine its elevation and alignment. (SPU to obtain O. D. at the same time.)

B. Provide all control Surveys required to define the alignment and elevations of the water main in conformance with **the approved** plan. A surveyor licensed by the State of Washington shall perform the Surveys. All reference marks shall be preserved during construction. A grade sheet, in acceptable format, shall be provided prior to beginning work.

8. Contractor shall notify owners (minimum of *48* hours in advance) of all affected underground utilities for field locating their facilities. The one call notification number is *1-800-424-5555*.

9. Care shall be exercised when excavating near existing charged water mains.

10. Locations shown for existing underground utilities are approximate. Utilities having no recorded depth are shown at their standard depth. Utilities that appear close to the proposed water main shall be exposed by the contractor prior to laying the water main to determine if changes are needed. Water/sewer separation shall be per Standard Plan #286. It shall be the contractor's responsibility to install ductile iron pipe in place of any other sanitary sewer pipe material where sanitary sewers are located above and closer than 10 feet, or cross over

any water line. See special provisions for minimum clearances, Section *I- I 07.17(2)B* regarding crossing of gas mains.

11. All water mains shall be pressure tested (300 psi) and disinfected in accordance with Section 7-11.3(12) of the Standard Specifications. All pressure testing shall be done in the presence of the construction inspector. The contractor is to provide plugs and temporary blowoff assemblies for pressure testing and disinfection. See Standard Plan #300 for flushing connection details.

12. The contractor shall comply with all requirements of the permits issued for this project.

13. Blowoff installation shall be per Standard Plan #340.

14. Concrete water main thrust blocking for horizontal fittings shall be per Standard Plan #331.

15. Horizontal angle point & vertical angle point shall be constructed deflecting pipe joints, unless otherwise specified.

WATER SERVICE NOTES

1. Application for new metered water service and all fees paid is required **60 to 90 days** before service will be available. Owner will need Water Availability Certificate and legal description of property when making application.

2. All water services piping on property must be inspected prior to backfilling trench.

3. For all water service information and inspection, phone (206) 684-5800.

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SELECTIVE NOTES ON PLANS FOR 4" THROUGH 2" WATER MAINS

To be added as needed to the Required General Notes

A. Hydrant connection shall be 6" D.I.P. CL. 52 conforming to AWWA C-151 with cement mortar lining conforming to AWWA C-104.

B. Hydrant installation shall be per Standard Plan #311.

C. Hydrant installation shall be per Standard Plan #310.

D. Hydrant traffic island protection shall be per Standard Plan #312.

E. Hydrant protection retaining wall shall be per Standard Plan #313.

F. Blowoff installation shall be per Standard Plan #340.

G. Valve box and operating nut extensions shall be per Standard Plan #315a.

H. Concrete water main thrust blocking for vertical fittings shall be per Standard Plan #330.
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I. Concrete water main thrust blocking for horizontal fittings shall be per Standard Plan #331.

J. Where shown on the plans, restrained joint pipe and fittings shall be TR Flex Restrained Joint as manufactured by U. S. Pipe Company or approved equal.

K. Where shown on the plans, pipe (W) and fittings shall be encased with polyethylene film conforming to AWWA C-105. Minimum thickness shall be 8 mil.

L. Where shown on the plans, pipe (W) and fittings shall be polyethylene tape coated or thermoplastic powder coated conforming to AWWA C-124 and SPU Special Provisions.

M. Trench backfill for pipe with protective coating or polyethylene encasement shall be per Standard Plan #350. Class B bedding noted shall be mineral aggregate type 6 & 7 (sand).

N. Electrolysis test stations shall be per Standard Plan #360 with wiring connections per the wiring diagram on the plans.

O. Joint bonding shall be per Standard Plan #362. 1.

P. Isolator couplings shall be per Standard Plan #363.

Q. Install 17-pound magnesium anodes a minimum of 3 feet below ground surface and a minimum of 12 inches apart as shown on the plans.